

**The Bruce C. Murray Chronological  
File Collection, 1976-1982  
2.7 cubic feet  
JPL 223**

## **Biography**

Bruce C. Murray was born November 30, 1931, in New York City. He earned a doctorate in Geology at Massachusetts Institute of Technology in 1955, and served as a geologist for Standard Oil from 1955-58. After serving as a Geophysicist for the U.S. Air Force, Murray joined the Caltech faculty as a Research Fellow of Planetary Science and Geology in 1960, and became a full Professor of Planetary Science and Geology at Caltech in 1969.

Dr. Murray was a member of the Mars Television Teams on Mariners 4, 6, 7 and 9, and was the Television Team leader for the Mariner 10 flyby of Venus and Mercury. He was named Director of JPL on June 23, 1975, officially succeeding William H. Pickering on April 1, 1976.

During his administration at JPL, the Voyager spacecraft were launched and reached Jupiter and Saturn, Seasat was launched, and the Galileo and Magellan programs were approved by Congress. Murray advocated several ambitious planetary missions, which he called "Purple Pigeons," such as a Jupiter Orbiter Probe, a Venus Orbital Imaging Radar, a Mars rover mission, a Lunar Polar Orbiter and a Comet Halley rendezvous. Murray also advocated the preliminary study of an interstellar probe. Most of these missions were ultimately cancelled due to lack of funding or support. Beginning in the mid-1970s, programs at JPL were increasingly concentrated in non-space related projects involving energy and defense work.

Dr. Murray resigned as Lab Director in June 1982. He has remained active in space research. In 1979 he was a co-founder of The Planetary Society, and he became the Society's President on the death of Carl Sagan in 1997. He was a member of the scientific teams of the Russian Phobos '88 mission, the Russian Mars 96 and the U.S. Mars Global Surveyor missions, and the U.S. New Millennium Mars Microprobe Team. He has published over 120 scientific papers and authored or co-authored six books.

## **Provenance**

The materials that make up the collection were transferred to the Laboratory Records Center (LRC) by Judy Levstik, Section 100, on February 12, 1986. They were transferred from the LRC to the JPL Archives on May 21, 2001 and became Accession 2001-18.

## **Collection Arrangement and Description**

The collection includes correspondence, memoranda, proposal summaries, and policy statements, all signed either by Bruce Murray or JPL Deputy Director Charles H. Terhune, Jr. Several of the policy statements and proposal summaries are represented only with the signature sheets.

The early part of the collection, up until mid-1980 primarily documents the average day-to-day running of the Laboratory. Most of the documents are rather routine, although some personal correspondence is in the collection from those years. Unlike the other chronological file collections (cf. JPL 198, 200, 202, 203), there are no indices for 1976 to mid-1980. It also appears as if Murray delegated many day-to-day functions of the running of the Laboratory to his Deputy Director, as many of the documents from 1976 to 1980 were signed by Terhune.

The files have more substance beginning in mid-1980. An index for October-December 1981 is filed at the beginning of October 1981. Beginning in January 1982, an index for each month is filed at the beginning of each month.

Murray communicated with several NASA personnel on a routine basis. These included Anthony J. Calio, NASA Office of Space and Terrestrial Applications; John E. Naugle, NASA Chief Engineer, to 1979; Robert A. Frosch, NASA Administrator, 1977-81; and James M. Beggs, NASA Administrator, 1981-85.

There is some indication that in the early days of his directorship Murray still needed some additional preparation in administering some aspects of the Laboratory. One example of this is a memo, dated May 3,

1976, from Murray to the Senior Staff where Murray admitted that there were some Civil Systems projects that he was not familiar with, and additional background presentations would be needed.

The fallout of the Vogt-James Committee on JPL-Campus Interactions Final Report (a.k.a. the "Orange Report") is represented with Parts 1 and 2 of "Where to Bite the Orange?" by R. W. Davies, an undated response to the Orange Report. Murray expressed surprise at the response at both JPL and Caltech with the Orange Report in an interoffice memorandum dated May 4, 1976.

There was also some concern about the potential loss of the capability to do "in-house" flight projects at JPL. An April 29, 1976 memo from ALD of Technical Divisions Geoff Robillard to the Executive Council noted that after the launching of Voyager, support for JPL's capability to acquire spacecraft by the subsystem contract mode would disappear. Represented in the collection is Robillard's original memo, attached to a May 5, 1976 memo from Murray to the Executive Council addressing the issue.

In June 1976, a series of correspondence from Bruce Murray to various scientists, regarding the "out-of-the-ecliptic mission to study the sun and the interplanetary medium in three dimensions," a joint effort between NASA and the European Space Agency. Murray asked for people to be members of the Science Working Group that was being formed, and co-chaired by Lennard Fisk and Marcia Neugebauer. The mission was later named the International Solar Polar Mission, eventually called Ulysses.

Throughout the collection there is correspondence from Murray to various scientists, asking for participation in various Science Working Group projects. In January 1977, Murray wrote several people asking for participation in a Mars Science Working Group to be headed by Dr. Tim Mutch of Brown University, with Geoff Briggs of JPL as Acting Project Scientist. This follow-on to the Viking Program was envisioned as an orbiter/rover combination, with a launch in 1984. Letters were sent to 16 scientists. In November 1978, a similar series of correspondence is in the collection, with the formation of the Comet Science Working Group.

One example of the "business as usual" type of memoranda that dominates the early years of the collection, as well as serving as a precursor to the future turmoil at JPL, a memorandum dated July 26, 1976, from Deputy Director Terhune to Distribution is titled "Guidelines for Employee Termination." Due to the anticipated reduction in JPL business volume in FY '77 and FY '78, the prospect of a significant number of layoff actions was imminent. The normal outplacement service that was available by Caltech to employees who were facing termination was expanded. An Outplacement Center was established at the Caltech Industrial Relations Center where professional help in career planning, the preparation of resumes, job interview strategy, as well as office space, telephone, secretarial and photocopy services would be available. The terminated personnel were administratively transferred to JPL organization 890, later changed to 090.

A letter from Murray to John E. Naugle, NASA Office of the Administrator dated August 27, 1976 was a foreshadowing of later troubles for JPL's Planetary Program. Murray commented on the draft of the NASA Five Year Plan dated August 19, 1976, noting NASA's pessimistic plans for lunar and planetary exploration in future years, along with a lack in any continuation of Mars exploration. Murray concluded the letter by stating that if the budget for lunar and planetary missions was decreased, "I am certain that we can only anticipate an abrupt end to the activity in the near future."

In January 1977 Murray agreed to transfer the Ranger Block III spacecraft in storage at JPL to the National Air and Space Museum. This transaction is documented in a letter from Murray to NASM Director Michael Collins.

A March 3, 1977 letter from Murray to Caltech Provost Robert F. Christy, Murray comments on how valuable Ed Stone has been as MJS Project Scientist, and how he had unusual ability to effectively organize his and other peoples' efforts. According to Murray, Stone's activities constituted a model of Laboratory-Campus collaboration.

In April 1977, Murray wrote to twelve engineers involved in oil production inviting them to serve on a review board to assist JPL with a NASA-sponsored study aimed at identifying possible applications of aerospace technology to petroleum production. This is indicative of the changing priorities at JPL beginning in the late 1970s.

In a July 8, 1977 letter from Murray to Noel W. Hinners, NASA Associate Administrator for Space Science, Murray lobbied for a collaboration between the Venus Orbiting Imaging Radar and a French-Soviet

Union Joint Mission to Venus, planned for 1983. Attached to the letter was a proposal written by Jacques Blamont of the Centre National d'Etudes Spatiales (CNES). It was proposed that the Venus Orbiting Imaging Radar (VOIR) mission and the Deep Space Network (DSN) be used as a tracking and telemetry radar for a French-Russian Venus balloon mission, while the Russian Orbiter could be used as a relay for VOIR. There were additional occultation and geophysics experiments that could be carried out by both missions as well. In the end, VOIR was cancelled and eventually given a new start as the Venus Radar Mapper, later named Magellan, and the French-Russian balloon mission to Venus became one aspect of the Vega 1 and 2 spacecraft, which encountered Venus on their way to Halley's Comet in 1985.

In March 1982, the issue was brought up again, with a proposal of a NASA/CNES launch on Ariane 4. A letter from Murray to Blamont dated March 5, 1982 is represented in the collection. Murray reported that a low altitude balloon with imaging would very seriously strain JPL's technical capabilities, and would probably be rejected by NASA on grounds of technical uncertainty. Additionally, hardware availability posed a problem. The possible use of hardware from the Pioneer Venus mission was proposed, but Hughes Aircraft Company had very little surplus hardware available.

In the file for September 1977 is an article published in *Science*, "Extraterrestrial Intelligence: An Observational Approach," by Bruce Murray, Samuel Gulkis and Robert Edelson. The collection includes the edited version, with a cover letter to Philip Abelson, editor of *Science* dated September 14, 1977.

An October 3, 1977 letter from Murray to General R. H. Curtin, asked him to reconsider a U.S. Army proposal to locate its National Training Center at Ft. Irwin, CA, adjacent to JPL's DSN installation at Goldstone. Murray noted that the use by the relocated center of electronic warfare (EW) devices would have the potential to totally disrupt communications with costly and scientifically important deep space missions. Murray cited the occurrence on October 28, 1976, when 30 to 45 minutes of Viking mission data were lost due to suspected EW jamming. Attached to the letter was a copy of part of a topographical map showing the locations of the DSN facilities at Goldstone in relation to Ft. Irwin.

In February 1978, Murray instituted the Distinguished Visiting Scientist program at JPL. The purpose of the program was to bring to the Lab on a short term or part-time basis, leading scientists who would enrich the Laboratory's programs. The first Distinguished Visiting Scientist (DVS) was Giuseppe Colombo of the Astrophysical Observatory at the Smithsonian Institution. A February 7, 1978 interoffice memorandum from Donald G. Rea to Murray noted that the DVS should report managerially to the Director, and should have his own budget and should be accountable only to the Director for the manner in which he spends his funds. The JPL Office of Technology and Space Program Development was assigned responsibility for assuring adequate support.

Another attempt at bringing in new people into the Lab was in August 1978, when a proposed postdoctoral program at JPL was proposed by Rochus E. Vogt of Caltech and Moustafa Chahine, Manager of the Earth and Space Sciences Division at JPL. The program was to use recent Ph.D. recipients from universities for limited duration positions for scientists and technologists at JPL. It was argued that the use of postdoctoral positions would provide additional strength, youth, and elements of change and new thinking to the programs of JPL scientists and technologists. It would also potentially be an excellent tool for improved Caltech-JPL interactions, with some postdoctoral fellows to hold joint appointments with the Campus. The collection includes two proposals for postdoctoral programs at JPL, written by Vogt and Chahine, as well as a cover sheet to the JPL Executive Council, written August 10, 1978.

An October 16, 1978 letter from Caltech Professor Kip Thorne to Bruce Murray related to Professor Stephen Hawking. Thorne reported that Hawking, who was suffering from a debilitating neurological illness, had reached the point where it had made him nearly incoherent. Thorne asked Murray if there would be a possibility of JPL assisting in designing an amplification and filter system for Hawking's voice. Murray passed the request along to Fred Felberg and Benn Martin. In a November 8, 1978 letter, Murray told Thorne that the problem had been given to Doug O'Handley, manager of JPL's Biomedical Technology Program.

In a letter to NASA Chief Scientist John E. Naugle dated January 22, 1979, Murray sketched out a background and history of the NASA-JPL institutional relationship. The various NASA organizations that JPL reported to in the past were noted. There also was a description of the NASA-JPL relationship in 1979,

as well as various alternatives for strengthening the NASA-JPL relationship. Earlier in the month there was some effort to organize a joint retreat between JPL personnel and personnel from the NASA Office of Space Science, in order to strengthen relations.

There is a February 5, 1980 Memorandum of Understanding between JPL and the World Space Foundation (WSF). JPL agreed to aid and support WSF in conducting a test flight of a solar sailing vehicle. JPL would conduct spacecraft environmental qualification tests in JPL facilities, provide an instrumentation package to monitor the sail, and to provide computer services to the WSF, while the WSF would have complete responsibility for sail vehicle design, fabrication and launch vehicle interface, and would be responsible for mission operations. The MOU was signed by Bruce Murray and Robert L. Staehle of WSF.

Two items that illustrate Murray's growing distress of the U.S. space program can be found in letters of April 1980. The first letter, dated April 21, 1980, Murray invited Freeman Dyson to visit JPL and help with solar sail and interstellar propulsion studies. The second letter, written April 23, 1980 to Arthur C. Clarke, Murray wrote: "Back here on Earth, 1980, that wonderful reaching out of the 1960's and 1970's to explore our solar system is faltering badly. Cost overruns and delays of the Space Shuttle have now caused two-year delays (at least) in the launches of the only new authorized missions, Galileo and Solar Polar. For similar reasons, nothing else can get started. I must sadly report that rather than ushering in 'The Promise of Space,' the Shuttle development at this point may constitute the greatest threat to space exploration since President Eisenhower's views and the Vanguard launch vehicle project."

Another letter that is indicative of this point of view was written by Clark R. Chapman of the Planetary Science Institute to Thomas A. Mutch, NASA Associate Administrator for Space Science, dated August 4, 1980. Chapman expressed his concerns of plans to make cuts in Research and Analysis in the Planetary Program. Chapman called the idea of a freeze or cut in the Planetary Program due to an arbitrary budget ceiling as short-sighted and irrational. Chapman viewed the idea of gutting the program to win VOIR as "suicidal," and called for support of both VOIR and Halley-Tempel 2 missions. A copy of the letter is represented in the collection, along with a brief note that Chapman wrote to Lou Friedman. On August 14, 1980, Friedman sent copies of the Chapman letter to Bruce Murray and others at JPL.

A letter written by Bruce Murray to Counselor to the President Edwin Meese III, dated January 20, 1981, the day of President Reagan's inauguration, began with Murray pulling no punches. "The future of American space exploration is in real jeopardy." Murray lobbied for a new start for a Halley's Comet mission, and a change in policy regarding the development of the Space Shuttle.

Another letter indicating Murray's attempts to gain support for the Galileo spacecraft was to Carol Lane, a professional staff member of the U.S. Senate Subcommittee on Science Technology. Murray's letter described the possible defense technology implications of Galileo, attempting to justify the project by noting the technology that would be gained for Defense.

The Voyager Project is barely mentioned in these chronological files until the Voyager 1 flyby of Saturn. On November 21, 1980, a series of form letters were sent to various Directors of NASA Centers and other prominent government officials, such as Secretary of the Air Force Hans Mark, Secretary of Defense Harold Brown, and Presidential Science Advisor Frank Press, enclosing several lithographs of Saturn taken by Voyager 1 during its October flyby. In March 1981, Murray lobbied Acting Associate Administrator for Space Science Andrew J. Stofan to add Carl Sagan in consideration for a Distinguished Public Service Award, for his contributions to Voyager and space exploration in general. On May 8, 1981, Murray notified Sagan that he was selected to receive NASA's Distinguished Public Service Medal, to be presented at a special Voyager awards ceremony at JPL on June 2, 1981.

There was some effort to invite President Ronald Reagan to JPL to personally witness the Voyager 2 encounter with Saturn in August 1981. Included in the collection are details on the Voyager encounter of Saturn that were sent via fax to Science Advisor George Keyworth to pass along to the President. In early August 1981 word was received that the President was not going to attend. Several of his representatives did attend the encounter at JPL, including Counselor to the President Ed Meese. In September 1981, Murray sent copies of lithographs taken of Saturn to several members of Congress who did not attend the Voyager 2 encounter.

The increasing role of the Department of Defense in JPL projects is documented in a December 9, 1980 report "Current Status of Defense Work Policies, Organizational Approach, and Work Content at JPL," prepared by Jack James. The potential consequences of increased defense work were explored, and the steps taken by JPL and Caltech to ensure that Defense work size, extent of classification, and appropriateness were controlled and regulated within the framework of Caltech and JPL's policies and interests. The report is represented in the collection as an attachment to the Senoir Staff from Murray, dated December 16, 1980.

There is a letter dated August 25, 1981, from Murray to the widow of Thomas Mutch, who died in a mountain climbing accident in the Himalayas in October 1980. Murray sent a collection of photos of Mutch from JPL staff members, and told her of renaming the Viking 1 landing site as the "Thomas A. Mutch Memorial Station."

Attempts at lobbying for a Halley's Comet mission continued throughout the Autumn of 1981. One letter in the collection, dated September 11, 1981, is from Murray to *Newsweek* columnist George F. Will. Will had earlier written in favor of the Halley's Comet mission, and Murray tried to pique his interest further by proposing a mission feature of bringing back a sample of the Comet to Earth.

By October 1981, the situation regarding future prospects of JPL was potentially grim. According to Murray in "Challenge Facing JPL," a background paper for Caltech faculty discussion dated October 20, 1981, there were three alternate directions possible for JPL: a continuation of present policies, as a NASA Center with significant DOD work, or as a DOD Laboratory. Murray considered the second possibility the only practical direction for JPL at that time. On November 3, 1981, Murray wrote to NASA Deputy Administrator Hans Mark, reporting that full approval for substantially expanding DOD programs at JPL was granted by the Caltech Administration and Board of Trustees.

Despite the impending storm clouds regarding the future of space exploration that were no longer merely on the horizon, Murray organized a workshop of fifteen scientists to stimulate a few good new or renewed ideas about carrying out important science in deep space during the second half of the 1980s. A rough concept paper put together by Murray and James D. Burke, dated November 30, 1981, was included along with cover letters to the invited participants, which included Jacques Blamont, Freeman Dyson, James Van Allen, Von Eshleman and Larry Soderblom.

Included in the collection is a copy of a news article dated December 2, 1981 quoting Presidential Science Advisor George Keyworth as recommending that all planetary exploration be cancelled for at least the next decade. Also included are letters from Murray to Arnold Beckman alerting Beckman of this possible disaster, as well as a letter to Keyworth and a draft letter to Ed Meese asking him "not to allow the emasculation of the technical and scientific capabilities of the Jet Propulsion Laboratory."

Murray announced his resignation as Director, effective June 30, 1982, at the end of his "State of the Lab" address on April 2, 1982. The remainder of the Chronological File for April 1982 is dominated by letters to people notifying them of his decision. Represented in the collection are slightly over 100 letters to people, including members of Congress, Caltech personnel, NASA personnel, NASA Center Directors, members of the Faculty Board and Oversight Committee for JPL, and other scientists and friends of Murray's.

#### JPL Discreet materials

Forty-six folders contain documents that are stamped or marked "JPL Discreet" or "SEB Discreet." The original positions of Discreet material in the collection have been marked with separation sheets. The material has been moved to a box at the end of the collection.

The vast majority of Discreet materials in the collection are either Source Evaluation Board memoranda or Noncompetitive Source Board memoranda. These were both pretty common documents, and nearly every month has at least a few Discreet documents. The SEB memoranda are usually from Terhune, while the Noncompetitive Source Board memoranda are from the Manager of the Procurement Division, Daryal T. Gant, to Phil Click, Fred Felberg, and either Robert J. Parks, William Bayley or H. M. Schurmeier. There are a few memoranda that were from Acting Division Manager Fraser Draper, or starting in 1979, Deputy Division Manager John Heie.

**Conservation/Preservation**

Standard preparations of documents for long term storage were completed.

**Separation Statement**

No items were separated from the collection.

**Finding Aids**

No other finding aids exist for the collection.

**FILE FOLDER LIST****Box 1 of 9**

Fld. 1 Chronological Files, April 1976.  
Fld. 2 May 1976.  
Fld. 3 June 1976.  
Fld. 4 July 1976.  
Fld. 5 August-September 1976.  
Fld. 6 October 1976.  
Fld. 7 November-December 1976.

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Fld. 8 Chronological Files, January 1977.  
Fld. 9 February 1977.  
Fld. 10 March 1977.  
Fld. 11 April 1977.  
Fld. 12 May 1977.  
Fld. 13 June 1977.  
Fld. 14 July 1977.  
Fld. 15 August 1977.

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Fld. 16 Chronological Files, September 1977.  
Fld. 17 October 1977.  
Fld. 18 November 1977.  
Fld. 19 December 1977.  
Fld. 20 January 1978.  
Fld. 21 February 1978.  
Fld. 22 March 1978.  
Fld. 23 April 1978.  
Fld. 24 May 1978.

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Fld. 25 Chronological Files, June 1978.  
Fld. 26 July 1978.  
Fld. 27 August 1978.  
Fld. 28 September 1978.  
Fld. 29 October 1978.  
Fld. 30 November-December 1978.  
Fld. 31 January-February 1979.

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Fld. 32 Chronological Files, March 1979.  
Fld. 33 April 1979.  
Fld. 34 May 1979.  
Fld. 35 June 1979.  
Fld. 36 July 1979.  
Fld. 37 August 1979.  
Fld. 38 September 1979.

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Fld. 39 Chronological Files, October 1979.  
Fld. 40 November 1979.  
Fld. 41 December 1979.  
Fld. 42 January 1980.  
Fld. 43 February 1980.  
Fld. 44 March 1980.  
Fld. 45 April 1980.  
Fld. 46 May 1980.

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Fld. 47 Chronological Files, June 1980.  
Fld. 48 July-August 1980.  
Fld. 49 September 1980.  
Fld. 50 October-December 1980.  
Fld. 51 January-March 1981.  
Fld. 52 April-June 1981.  
Fld. 53 July-September 1981.

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Fld. 54 Chronological Files, October-November 1981.  
Fld. 55 December 1981.  
Fld. 56 January-March 1982.  
Fld. 57 April 1982.  
Fld. 58 May-June 1982.

**Box 9 of 9 – JPL Discreet**

JPL Discreet materials; 46 folders.

**CATALOG DESCRIPTION**

Bruce C. Murray Chronological File Collection, 1976-1982

2.7 cubic ft. (104 folders)

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The collection contains JPL Discreet materials.

Finding aid available in the repository.

## Tracings

Jet Propulsion Laboratory – History.  
National Aeronautics and Space Administration  
California Institute of Technology  
Venus Orbiting Imaging Radar  
Halley's Comet  
Voyager Project  
Murray, Bruce C., 1931-  
Terhune, Charles H., 1916-  
Davies, Richard W.  
Vogt, Rochus E.  
Robillard, Geoffrey  
James, Jack N., 1920-  
Gant, Daryal T.  
Gulkis, Samuel  
Edelson, Robert  
Brown, Harold, 1927-  
Draper, Fraser  
Chahine, Moustafa T., 1935-  
Heie, John  
Frosch, Robert A., 1928-  
Hinnens, Noel W., 1935-  
Colombo, Giuseppe, 1920-1984.  
Blamont, Jacques  
Dyson, Freeman, 1923-  
Keyworth, George A., 1939-  
Meese, Edwin, III., 1931-  
Mark, Hans, 1929-  
Sagan, Carl, 1934-1996  
Chapman, Clark R.  
Thorne, Kip, 1940-  
Hawking, Stephen, 1941-  
Mutch, Thomas A., 1931-1980.  
Beggs, James M., 1926-

Accession 2001-18.